

7-2 Skills Practice***Solving Exponential Equations and Inequalities*****Solve each equation.**

1. $25^{2x+3} = 25^{5x-9}$

4

2. $9^{8x-4} = 81^{3x+6}$

8

3. $4^{x-5} = 16^{2x-31}$

19

4. $4^{3x-3} = 8^{4x-4}$

1

5. $9^{-x+5} = 27^{6x-10}$

2

6. $125^{3x-4} = 25^{4x+2}$

16**Solve each inequality.**

7. $\left(\frac{1}{36}\right)^{6x-3} > 6^{3x-9}$

 $x < 1$

8. $64^{4x-8} < 256^{2x+6}$

 $x < 12$

9. $\left(\frac{1}{27}\right)^{3x+13} \leq 9^{5x-\frac{1}{2}}$

 $x \geq -2$

10. $\left(\frac{1}{9}\right)^{2x+7} \leq 27^{6x-12}$

 $x \geq 1$

11. $\left(\frac{1}{8}\right)^{-2x-6} > \left(\frac{1}{32}\right)^{-x+11}$

 $x > -73$

12. $9^{9x+1} < \left(\frac{1}{243}\right)^{-3x+5}$

 $x < -9$ **Write an exponential function whose graph passes through the given points.**

13. (0, 3) and (3, 375)

$y = 3(5)^x$

14. (0, -1) and (6, -64)

$y = -1(2)^x$

15. (0, 7) and (-2, 28)

$y = 7\left(\frac{1}{2}\right)^x$

16. $\left(0, \frac{1}{2}\right)$ and (2, 40.5)

$y = \frac{1}{2}(9)^x$

17. (0, 15) and (1, 12)

$y = 15(0.8)^x$

18. (0, -6) and (-4, -1536)

$y = -6\left(\frac{1}{4}\right)^x$

19. $\left(0, \frac{1}{3}\right)$ and (3, 9)

$y = \frac{1}{3}(3)^x$

20. (0, 1) and (6, 4096)

$y = (4)^x$

21. (0, -2) and (-1, -4)

$y = -2\left(\frac{1}{2}\right)^x$